Natural Resource GIS Program

National Park Service
U.S. Department of the Interior

NPS Metadata Tools and Editor Exercise: Editing Metadata

GOAL: To edit metadata with the NPS Metadata Tools and Editor.

The NPS Metadata Tools and Editor facilitates metadata editing and creation for both geospatial and non-geospatial data. Using the Metadata Tools and Editor with geospatial metadata within ArcCatalog requires a slightly different workflow than non-geospatial metadata in the stand-alone version. This exercise reviews the ArcCatalog-specific workflow required to generate, edit and parse a geospatial metadata record for a geodatabase feature class. Steps specific to the Metadata Tools and Editor within ArcCatalog are highlighted in **red font**.

For extensive detail on metadata authoring for the NR-GIS Data Store, including example templates, see the Data Store Help documentation at http://science.nature.nps.gov/nrdata/docs/metahelp/metahelp.cfm.

REQUIRED MATERIALS
The following materials are needed to complete this exercise.

1.   The NPS Metadata Tools and Editor application (http://science.nature.nps.gov/nrgis/tools/editor.cfm)

2.   Sample data file (*C:\CLASS\DATA\GIS*)

EXERCISE STEPS
**Step 1: Open the ArcCatalog version of the NPS Metadata Tools and Editor**

Open ArcCatalog by clicking the desktop icon or selecting ArcCatalog from the Start → All Programs → ArcGIS menu.

Be sure the Create and Update Metadata options are disabled.   Open the **Tools → Options** dialog and click the Metadata tab.   <u>Uncheck</u> the Creating metadata and Updating metadata checkboxes. Click 'OK'.
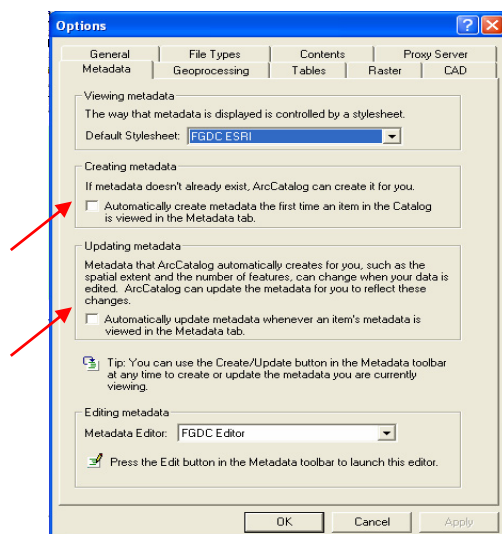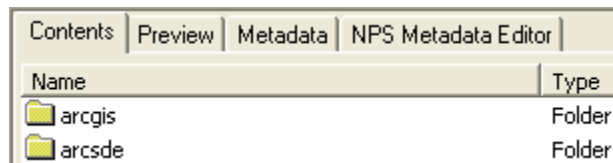
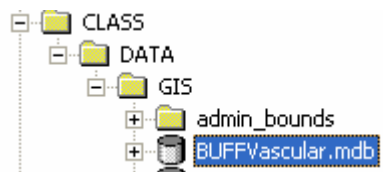## Step 2: Generate metadata for a geodatabase feature class

Connect to the *C:\CLASS* folder in ArcCatalog by clicking the Connect to Folder button and navigating to C:\CLASS.   Click 'OK' to connect.
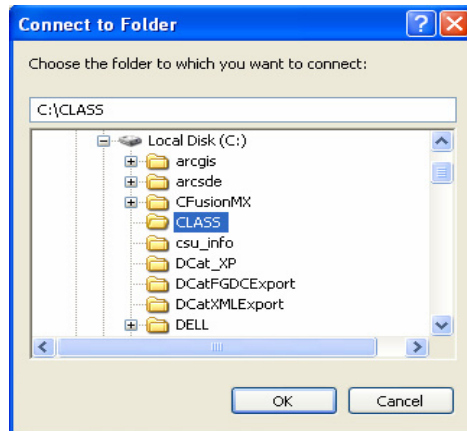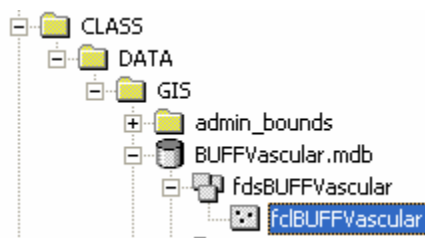
Click the Contents tab in the ArcCatalog viewing pane.

Use the ArcCatalog table of contents pane to navigate to the sample geodatabase (BUFFVascular.mdb) in the *C:\CLASS\GIS* folder.
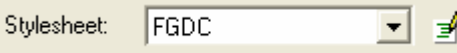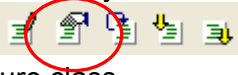
Notice the geodatabase contains a feature dataset with a feature class (analogous to a shapefile): fclBUFFVascular. Several relationship classes and data tables are present as well.   To see the vascular sampling sites layer, open the *C:\CLASS\DATA\GIS\buff_sites83.mxd* in ArcMap.

The fclBUFFVascular feature class requires metadata. You will use ArcCatalog's metadata generation capability to stub out metadata for fclBUFFVascular and then complete the metadata using the NPS Metadata Tools and Editor. *(Note: Data stewards are free to determine the level of metadata for geodatabase components. The NR-GIS Program recommends documenting individual feature classes of a geodatabase but stewards can create metadata for the geodatabase itself, individual data tables, etc as desired.)*

Highlight the fclBUFFVascular feature class in the table of contents pane.

Click the 'Metadata' tab in the viewing pane. It should show a message that no metadata exists for the

feature class.   Be sure the FGDC stylesheet is selected and click

the Create Metadata button on the ArcCatalog metadata toolbar to generate metadata
for the fclBUFFVascular feature class.

Scroll around in the FGDC viewing pane to see the metadata elements that ArcCatalog automatically
populates. Notice in the Identification Information section that the online linkage defaults to the local
system path of the geodatabase and the bounding coordinates are harvested from the feature class.
The spatial reference information is also input automatically. The handiest feature of ArcCatalog's
metadata creation is the harvesting of entity and attribute information. This is analogous to the Data
Dictionary harvester capability in Dataset Catalog.

Step 3: Fix metadata 'errors' introduced by ArcCatalog

ArcCatalog's metadata generator introduces a few anomalies in the resulting metadata. And, if
ArcCatalog's default metadata editor is used, other errors are generated that should be corrected prior to
posting to the NR-GIS Data Store (see the list of these known issues at the end of this exercise).

Switch to the NPS Metadata Editor tab to edit the feature
class metadata. Notice the default **NPS_Basic_Edit** stylesheet is selected

. Make the record more readable by collapsing the
NPS_Information section (click on the button next to the section label or the section label itself).
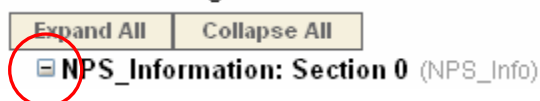
Scroll into Identification_Information: Section 1 and find the Title of Dataset element. Notice it is not very
descriptive beyond the scope of this geodatabase (ArcCatalog defaults to the geospatial layer name).
Click it and change it to something more informative keeping in mind the NR-GIS Data Store displays
dataset titles in search results.

As noted above, the Online Link to Dataset element defaults to the local system path.   Click it and
change it to the recommended general link to the NR-GIS Data Store:

http://science.nature.nps.gov/nrdata.   Click the Save Metadata button to save the edits.

ArcCatalog helpfully inserts text prompts into FGDC-required metadata elements. Unfortunately for
Theme Keywords, this insert messes up the NPS_Basic_Edit functionality. Switch back to the ArcCatalog

Metadata tab: . To delete the Theme Keyword prompt text,

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open the ArcCatalog editor by clicking the Edit Metadata button on the ArcCatalog metadata toolbar
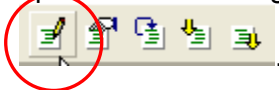
Open the Keywords tab and delete the Theme Keyword and Theme Keyword Thesaurus values. Close the ArcCatalog metadata editor and switch back to the NPS Metadata Editor tab.   Scroll down to the Keywords section under Identification_Information and verify three Theme Keywords entries appear.

Step 4: Add NPS Profile information

Several metadata elements are required or recommended for the NR-GIS Data Store. These are indicated with 'MANDATORY/REQUIRED' or 'RECOMMENDED' prompts respectively.   Starting with the NPS_Information section in the NPS_Basic_Edit stylesheet, populate these elements for the metadata record. Include Data Steward contact information but DO NOT enter contact information in other sections – we will use an XML template to update these elements.   Also, do not populate the Network Resource Name field in the Distribution_Information section – the NR-GIS Data Store upload process will prompt for this.

Use the NPS_Basic_Edit stylesheet to enter at least these elements:

> **NPS_Information section**:
>> Metadata Purpose (add 'OnlineData' and 'CSGDM' options)
>> NPS Unit Information (enter your NPS unit even though the data are for BUFF)
>> NPS Theme Category (choose one)
>> Data Site (use the default: NR-GIS)
>> Data Steward (enter an actual contact person)

> **Identification_Information section**:   **Distribution_Information section**:
>> Originator   Contact (entered in step 5)
>> Publication Date (use YYYYMMDD format)   Liability Statement (use default)
>> Abstract and Purpose
>> Time Period Information
>> Status
>> Keywords: Theme, Place (use NPS keyword thesauri picklists)
>> Access and Use Constraints (default to 'None')
>> Point of Contact (entered in step 5)

> **Metadata_Reference section**:
>> Contact (entered in step 5)
>> Metadata Extension (insert section for NPS Metadata Profile)

See the detailed section-by-section instructions below.

Adding NPS-Specific Elements Required by the NR-GIS Data Store

> **Metadata_Purpose (Mandatory)**
> For metadata that will be posted to the NR-GIS Data Store, populate the Metadata_Purpose element as follows. The Metadata_Purpose value determines the search type of the record in the Data Store. Insert additional Metadata_Purpose elements to include more than one Metadata_Purpose value. Do not use comma delimited lists.
>> • NPS (the default Metadata_Purpose when using the NPS Metadata Profile) and, if appropriate, at least one of:

- o <u>OnlineData</u> if associated data exist on any accessible server (the link to the data file should be present in the Distribution_Information section Standard_Order_Process element)
- o <u>CSDGM</u> if the metadata is full or minimal Content Standard for Digital GeoSpatial Metadata (mutually exclusive with DataCat value)
- o <u>DataCat</u> if the metadata originated in the NPS Dataset Catalog desktop application (mutually exclusive with CSDGM value)
- o <u>BioProfile</u> if the record includes Biological Data Profile metadata (pending)
- o <u>DataStandard</u> if the record documents a GIS or data standard (pending)
- o <u>ESRI</u> if the metadata uses only the ESRI Profile (pending)
- o <u>Other</u> if the metadata does not fit in any of the other categories

NPS_Unit_Information (Mandatory)

For <u>each</u> NPS unit (park, monument, office, etc.) to which the record is linked, populate a NPS Unit Information section:

- NPS **Unit Alpha Code**
- NPS **Unit Type**
    - o one of: Park, Office, Network, Region, Program (or free text).   UnitType must be populated for each UnitCode used.

For additional NPS units, repeat Unit Alpha Code and Unit Type information by inserting another NPS Unit Information section.
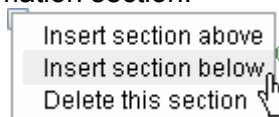
Data_Store_Information (Mandatory if posting to NR-GIS Data Store)

If data are available on any server accessible to users, the record is considered an 'OnlineData' record (see Metadata_Purpose above). For these records, the compound Data_Store_Information element is mandatory.

Data_Category (Mandatory)

The NPS Theme Category element enhances searching of OnlineData records in the Data Store.

- Select least one value from the NPS Theme Category list.
- Add additional NPS Theme Category values by inserting additional elements. <u>Do not</u> use comma delimited lists.

Data_Site (Mandatory if online data are available anywhere)

- Populate a Data Site Abbreviation value from the following list:
    - o NR-GIS, AKSO, USGS, free text
    - o Example (NR-GIS = NR-GIS Data Server – this default value is for data posted to the NR-GIS Data Store):

Data_Steward (Mandatory if online data are posted on the NR-GIS Data Store)

Populate the Contact Information element for the Data_Steward. This should be an actual person's name to facilitate contact by administrators of the NR-GIS Data Store.

Adding or Editing FGDC Elements Required by the NR-GIS Data Store

The NR-GIS Data Store requires elements from section 1 (Identification_Information), section 6 (Distribution_Information), and section 7 (Metadata_Reference) of the FGDC Content Standard for Digital

Geospatial Metadata.   Mandatory and recommended elements for the NR-GIS Data Store are noted in **red** font. Elements required by Metadata Parser are noted in **black** font.

Identification Information (Section 1)

Citation (1.1)
        Originator (8.1) Enter a meaningful value
        Publication_Date (8.2) Use this format: YYYYMMDD.
        Title (8.4) (Mandatory)
                Include as much relevant detail as possible including the NPS unit name(s) e.g. *Yellowstone Aquifer Systems and Recharge Potential from NHD source data, Geographic NAD83, NPS (2003) [aqrgeog3dpdeq]*
        Online_Linkage (8.10) (Recommended if online data are available anywhere)
                Populate the **Online_Linkage** (Citation Information) with the top-level target URL. Use the following format:
- For <u>non-sensitive</u> data on the NR-GIS Data Store, the top-level application URL is http://science.nature.nps.gov/nrdata.
- If data are served from a different server (USGS, Alaska, etc), use the top-level URL for that server in this element instead.

Abstract (1.2.1) Provide appropriate explanatory background.

Purpose (1.2.2) Document the purpose of the dataset.
Time_Period_of_Content (1.3) Use this format: YYYYMMDD
        Currentness_Reference (1.3.1) Select an option from the picklist.

Progress (1.4.1) Indicate the current progress.

Theme_Keyword (1.6.1.1) (Mandatory)
Use the NPS Theme Category Name picklist and ISO 19115 Topic Category picklist for these values.
- Include at least one NPS Theme Category Name keyword. If missing, enter '*National Park Service Theme Category Thesaurus'* as the theme keyword thesaurus value (Note: this value is pre-populated in the templates available from the NR-GIS Data Store Instructions help page). If the Category element in the NPS_Information section is not populated prior to uploading to the NR-GIS Data Store, the values in this keyword or keywords will be used to populate the Category value. (Note: this value is pre-populated in the editing stylesheets.)
- Include at least one ISO Topic Category Name referencing the associated Theme_Keyword_Thesaurus as '*ISO 19115 Topic Category'* (Note: this value is pre-populated in the editing stylesheets.)
- If relevant, insert another theme keyword section identifying I&M Program Monitoring Framework(s) and or vital sign(s) addressed by the data set.   Use 'None' as the keyword thesaurus value.
- If relevant, insert another theme keyword section for project-, program-, application-, or system-specific keywords that may help users find and understand the data. Examples include the protocol name for a Natural Resource Database Template database or NPS Research Permits and Reporting System study titles or subjects.   Use 'None' as the keyword thesaurus value.
- Include other theme keywords as desired

Place_Keyword (1.6.2.1) (Mandatory)
Include at least one NPS Unit Code and at least one NPS Unit Name as Place Keywords.
- For the NPS Unit Code place keyword(s), use '*National Park System Unit Code*

Thesaurus' as the Place_Keyword_Thesaurus value (Note: this value is pre-populated in the editing stylesheets.) Select a Unit Code from the picklist. Insert additional Unit Code keyword elements as needed.
- For the NPS UnitName place keyword(s), include '*National Park System Unit Name Thesaurus*' as the Place_Keyword Thesaurus value. (Note: this value is pre-populated in the editing stylesheets.) Select a Unit Name from the picklist. Insert additional Unit Name keyword elements as needed.
- If relevant, insert another place keyword section geo-political, regional, and/or local references such as city or county name, state, state acronym, regional descriptions and references. Use 'None' as the keyword thesaurus value.

Access_Constraints (1.7)
For non-sensitive records destined for the NR-GIS Data Store, populate this element with the value 'None' (no quotes) unless the data being documented are sensitive.   Metadata records with any value other than 'None' in the Access_Constraints element are assumed to be sensitive.

Use_Constraints (1.8) Defaults to None but can be customized as needed.

Point_of_Contact (1.9) (Mandatory)
This is the individual or organization that is knowledgeable about the data set and should be contacted with questions.

Browse_Graphic (1.10) (if used, follow recommendations below)
Place the full path to the browse graphic in the **Browse_Graphic_File_Name** element.
Example path for park-level metadata on the NR-GIS Data Server:
> http://nrdata.nps.gov/CODE/CODEDATA/FILENAME.* (i.e.,
> http://nrdata.nps.gov/beol/beoldata/beol_berm.jpg)

Note: The browse graphic filename should have the same root as the data and metadata files whenever possible.

Include the **Browse_Graphic_File_Description** and **Browse_Graphic_File_Type** elements as well or parse errors will occur.

Security_Information (1.12)
In general, only populate this element for sensitive data destined for the NR-GIS Data Store (available at release v2).

Cross_Reference (1.13) for Metadata File (Mandatory if metadata is posted to the NR-GIS Data Store)
The NR-GIS Data Store uses one Cross_Reference element to display a direct circular link to this metadata file in the search results and OnlineData displays. Therefore, if an XML metadata file will be posted to the NR-GIS Data Store, include one and only one cross-reference citation element that references this metadata. The proper format for the cross reference citation **Title** element is:
> Metadata for <Dataset Title from Dataset Citation (see section 1.1 above)>

Populate the **Online_Linkage** child element of this cross reference citation with the full NR-GIS Data Server URL for the metadata file (e.g.,
http://nrdata.nps.gov/CODE/CODEdata/<metadatafilename>.xml).

Include the **Originator** and **Publication_Date** elements from the Dataset Citation (1.1) as well or parse errors will occur.

Note: The metadata filename should have the same root as the data file whenever possible.

Cross_Reference (1.13) for More Info

The NR-GIS Data Store uses one Cross_Reference element to display direct links to a general information link in the OnlineData display. If desired, include a cross-reference citation element that references this general link. The proper format for the cross reference citation **Title** element is:

> More Info for <Dataset Title from Dataset Citation (see section 1.1 above)>

Populate the **Online_Linkage** child element of this cross reference citation with the full URL for the general information link.

Include the **Originator** and **Publication_Date** elements from the Dataset Citation (1.1) as well or parse errors will occur.

Distribution Information (Section 6)

Distributor (6.1) (Recommended if online data are available anywhere)

The individual or organization that distributes the data. The Natural Resource GIS Coordinator and the NR-GIS Team are not considered the Distributors.

Distribution_Liability (6.3) (Mandatory)

For NPS metadata, include the following text in the **Distribution_Liability** element (pre-populated in the editing stylesheets):

The National Park Service shall not be held liable for improper or incorrect use of the data described and/or contained herein. These data and related graphics (i.e. GIF or JPG format files) are not legal documents and are not intended to be used as such. The information contained in these data is dynamic and may change over time. The data are not better than the original sources from which they were derived. It is the responsibility of the data user to use the data appropriately and consistent within the limitations of geospatial data in general and these data in particular. The related graphics are intended to aid the data user in acquiring relevant data; it is not appropriate to use the related graphics as data. The National Park Service gives no warranty, expressed or implied, as to the accuracy, reliability, or completeness of these data. It is strongly recommended that these data are directly acquired from an NPS server and not indirectly through other sources which may have changed the data in some way. Although these data have been processed successfully on computer systems at the National Park Service, no warranty expressed or implied is made regarding the utility of the data on other systems for general or scientific purposes, nor shall the act of distribution constitute any such warranty. This disclaimer applies both to individual use of the data and aggregate use with other data.

Standard_Order_Process (6.4) (Mandatory if online data are available anywhere)

This is the primary data distribution link used in the NR-GIS Data Store.   For metadata with associated data posted on any accessible server including the NR-GIS Data Store (i.e., Metadata_Purpose = OnlineData), populate at least one **Standard_Order_Process** element detailing both the **Digital_Transfer_Information.Format_Name** (6.4.2.1.1), the **Digital_Transfer_Information.Transfer_Size** (6.4.2.1.7) and the **Digital_Transfer_Option**.**Network_Address** (6.4.2.2.1.1.1) with a **Network_Resource_Name** (6.4.2.2.1.1.1.1) child element.

Use **Network_Resource_Name** element to fully represent the data distribution location using complete URLs:

- direct download URLs that start with either ftp:// or http:// and point to filenames with .zip, .tgz, .tar, .gz, .dxf, or .e00 extensions
    - For <u>non-sensitive data</u> on the NR-GIS Data Server, the server name component of the URL is http://nrdata.nps.gov
    - An example of a full data distribution URL for the NR-GIS Data Server is: http://nrdata.nps.gov/CODE/CODEDATA/FILENAME.* (i.e., http://nrdata.nps.gov/BEOL/BEOLDATA/beol_berm.zip)
    - If data are served from different server (USGS, Alaska, etc), use the full URL for that server in this element.

If known, include **Format_Name** (6.4.2.1.1) and **Transfer_Size** (6.4.2.1.7) values in the **Standard_Order_Process** element. **Transfer_Size** should be in megabytes without the 'Mb' unit notation.

Metadata Reference (Section 7)

Metadata_Date (7.1) Use this format: YYYYMMDD.

Metadata_Contact (7.4) (Recommended)
The individual or organization that is responsible for the metadata for the data set.

Metadata_Standard_Name (7.5) (Recommended)
For formal FDGC metadata, include at least this element if metadata will be posted to the NR-GIS Data Store (pre-populated in the editing stylesheets):
 Content Standard for Digital Geospatial Metadata

Metadata_Standard_Version (7.6) (Recommended)
For formal FDGC metadata, include at least this element if metadata will be posted to the NR-GIS Data Store (pre-populated in the editing stylesheets):
 FGDC-STD-001-1998

Metadata_Extensions (7.11) (Mandatory)
Include the following values for records posted to the NR-GIS Data Store (pre-populated in the editing stylesheets):
 **Online_Linkage (7.11.1)**: *http://nrdata.nps.gov/profiles/nps_profile.xml*
 Profile_Name (7.11.2): *NPS Metadata Profile*

<u>Save your metadata before moving on to step 5.</u>

Step 5: Update metadata with an XML template

The NPS Metadata Tools and Editor has a Metadata Template creation tool.   While it is handy, it only harvests contact information metadata elements from the Identification Information section.
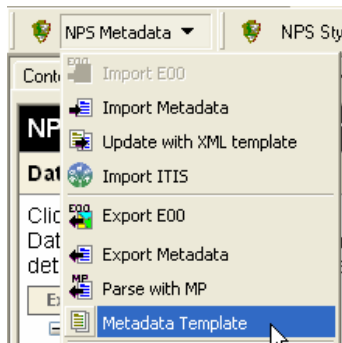
Entering repeating sections like Contact Information by hand is very tedious. In a fully compliant NPS Profile record, contact information appears in the Identification Information, Data Quality, Distribution Information and the Metadata Reference sections.   Adding this information using an XML template speeds up the metadata process considerably.

Before updating the record with a template, make a backup copy. Use the NPS Metadata Export Metadata tool to export it to an XML file in the *C:\CLASS\DATA\GIS* folder.
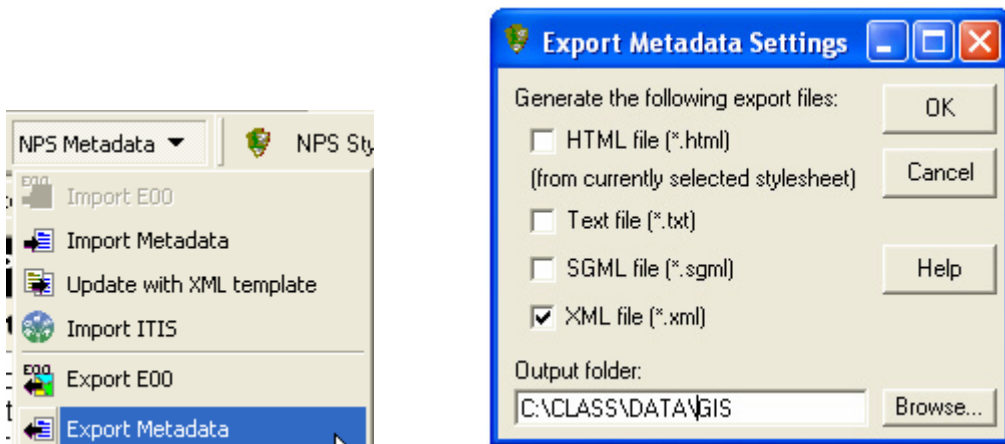
It is good practice to make backup copies of any metadata before updating it with an XML template.

As noted above the Metadata Template tool gets Contact Information only from the Identification Information section. The NPS Profile recommends populating the Contact Information sections in Identification Information, Distribution Information and Metadata Reference. Therefore, you will use a pre-defined XML template to update all these sections.

Caveats for the Update with XML Template tool:

> 1. Be sure the proper target for updating is selected in the ArcCatalog table of contents. The Update with XML Template tool will batch update all records in a folder if a folder is selected.

> 2. Existing content in target sections or elements is replaced by content in the template.

> 3. For repeating metadata elements like keywords and process steps, the Update with XML Template tool reads the hierarchical tree for each element selected in the template XML and inserts that element into the same place in the hierarchical tree in the target XML. If an element

already exists in that location it will be overwritten. This procedure can produce unexpected results when it is used to update a repeating element, such as Keywords, or Process Steps.

Updating a single record with an XML Template

The Update with XML Template tool works on single metadata records in both the ArcCatalog and stand-alone versions of the Metadata Tools and Editor.   You will use it to update Contact Information in the fclBUFFVascular metadata record.
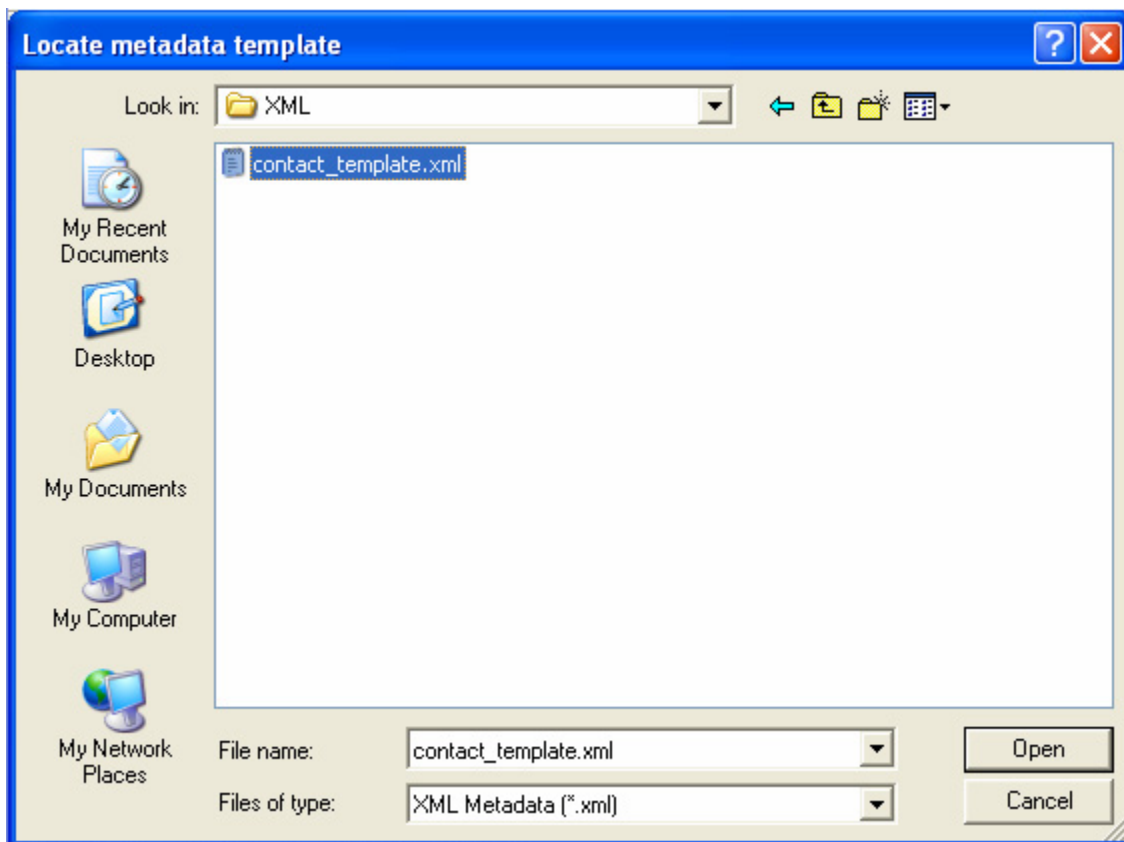
Be sure the fclBUFFVascular feature class is highlighted in the ArcCatalog table of contents.
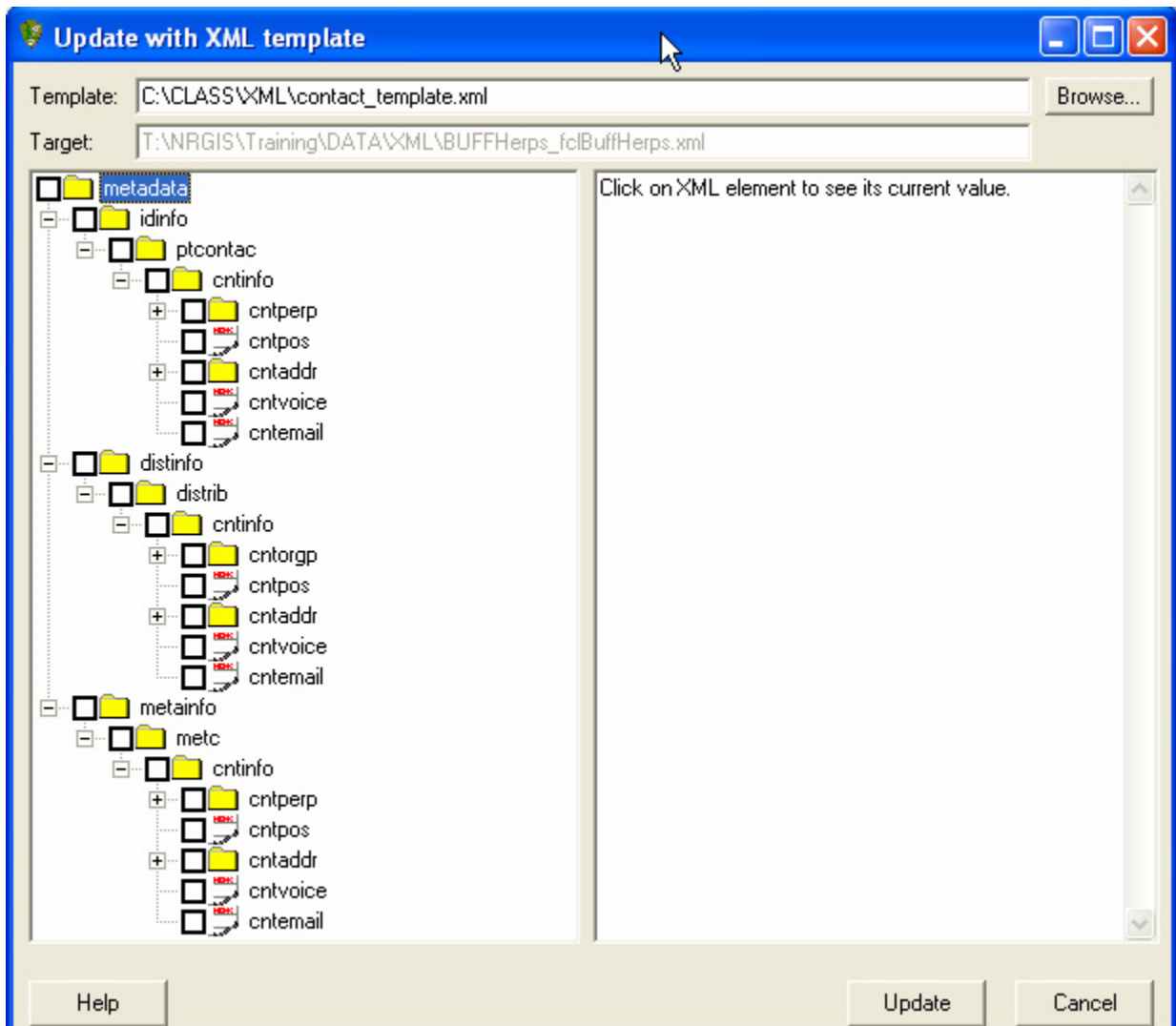

Select the Update with XML Template tool from the NPS Metadata menu.
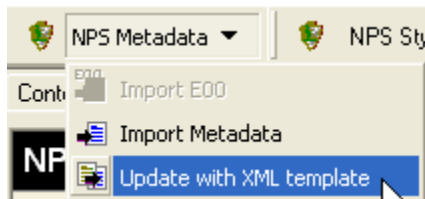
Navigate to the *C:\CLASS\DATA\XML\contact_template.xml* file in the Locate Metadata Template dialog window. Click the Open button to display the template content.

Expand the template tree so you can see the individual Contact Information sections in the template.

Metadata sections are denoted with folder icons 📁 while elements containing value have the 📑 icon. Click on the element names to see the values of the metadata elements displayed in the right pane.

Select the following elements to update by checking the boxes next to the element names: **ptcontac**, **distrib**, **metc**.   Now, the tree should look like this. Notice that all child elements under a parent element are automatically selected. (If you want to update only selected children of a parent element, you would de-select the parent and individually select each child to be updated.)
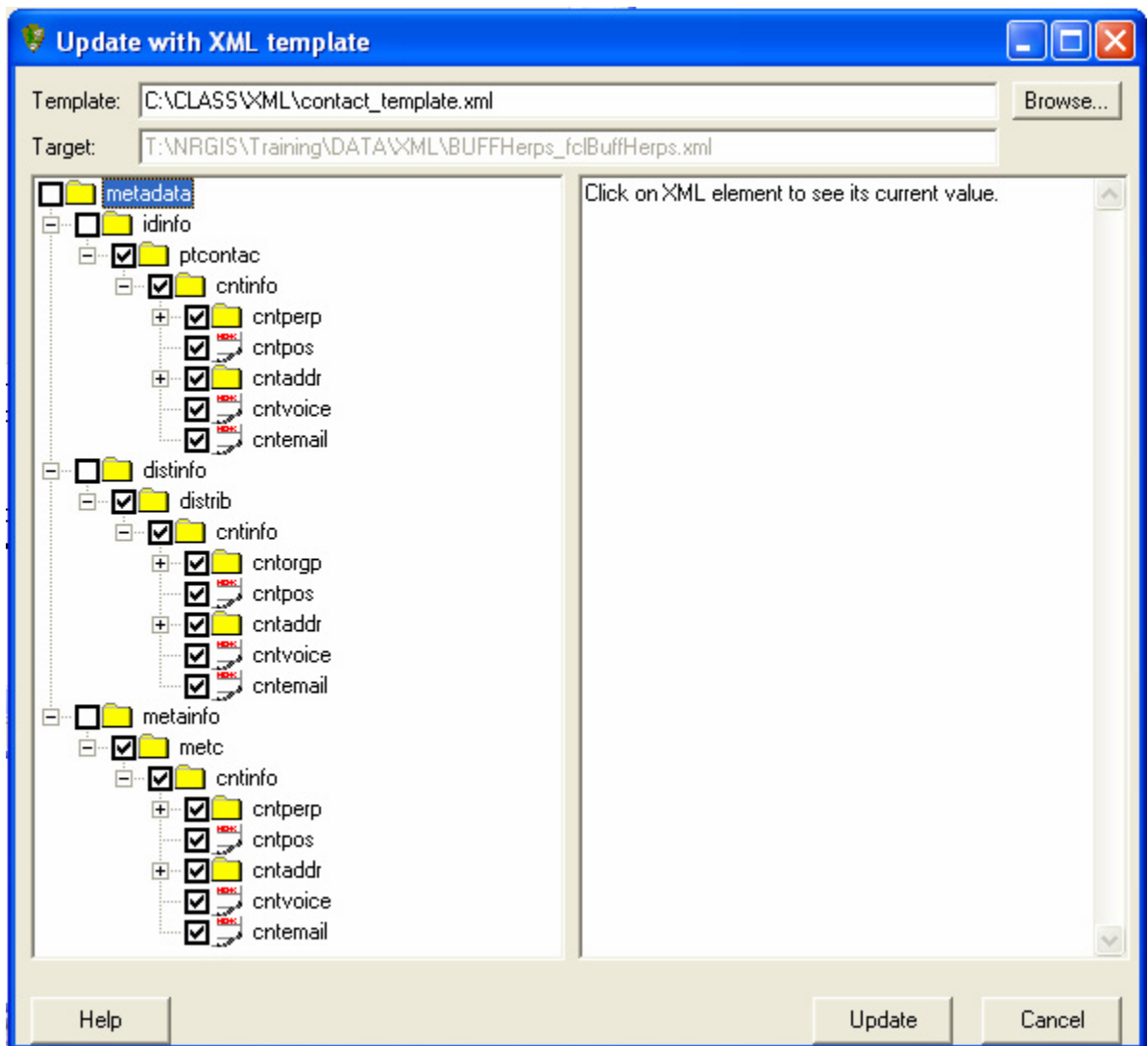
Click the 'Update' button to insert the template content into the metadata record.

View the metadata with the NPS_Basic_Edit stylesheet to see if the Contact Information sections were updated correctly.

<u>Save the metadata.</u>

For instructions on updating multiple records or a folder of records with an XML template, see the NPS Metadata Tools and Editor help documentation (note: multiple record and folder updates are available only in the ArcCatalog version).

Several templates for NR-GIS Data Store metadata are available on the NR-GIS Data Store Instructions help page (http://science.nature.nps.gov/nrdata/docs/metahelp/metahelp.cfm). These templates can be customized and used to update one or more metadata records destined for the NR-GIS Data Store. These templates can be used with the NPS Metadata Tools and Editor or with other metadata editors that support templates.

The following templates are available:
- the NPS_Basic template contains the NPS and minimal FGDC elements required if both metadata and data will reside on the NR-GIS Data Store

- If only the metadata will reside on the NR-GIS Data Store and the data are available on another server, change the value of the <DataSite> tag in the NPS_Basic template
- the NPS_Basic_MDOnly template contains the NPS and minimal FGDC elements required if only the metadata will reside on the NR-GIS Data Store and the data are <u>not</u> available on another server

In each template, the values for Metadata_Purpose, Data_Site, Theme and Place Keyword Thesaurus, Distribution_Liability, Metadata_Standard and Metadata_Extension are pre-populated.

These templates can be used to populate both the NPS-specific elements and the required FGDC elements for the NR-GIS Data Store.

Step 6: Create new metadata (optional)

Both the stand-alone and ArcCatalog versions of the NPS Metadata Tools and Editor application allow creation of new metadata independent of a geospatial dataset via the 'New Metadata' option.
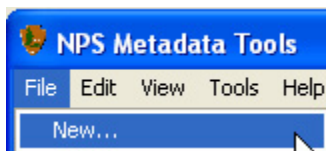
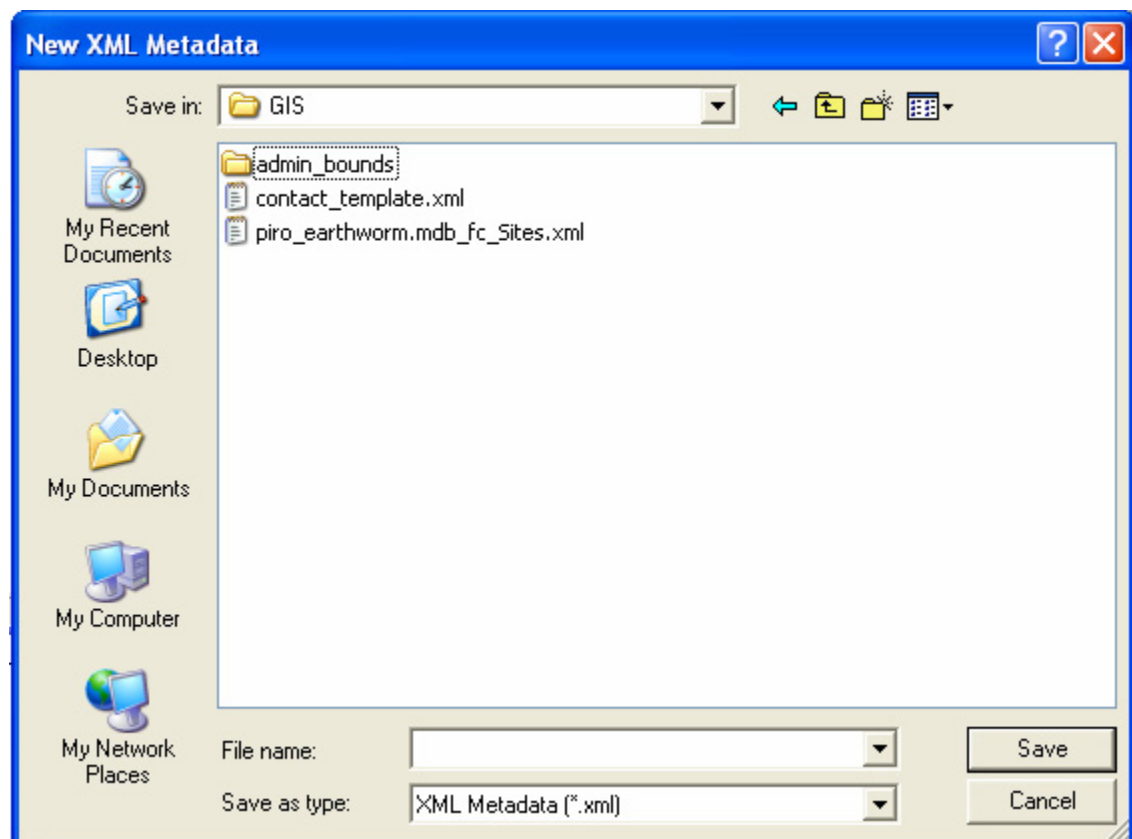   Stand-alone   ArcCatalog

By default, the tool creates an individual XML file.

Switch to the stand-alone version of the Metadata Tools and Editor. Select **File → New** and enter a file name (no spaces!) in the New XML Metadata dialog.

The NPS_Basic_Edit stylesheet will display the new metadata record with a default dataset title (FGDC Template). Enter relevant metadata element values and save the metadata file.

CONCLUSION

This exercise reviewed the metadata editing and parsing functions of the NPS Metadata Tools and Editor.

KNOWN ISSUES WITH ArcCatalog's METADATA EDITOR and AUTOGENERATION UTILITY

1. Adds prompt text to Theme Keywords that removes NPS Metadata Editor Theme Keyword editing functions.

2. Introduces an empty Theme Keyword if Keyword tab is opened but no keyword is entered. This will block editing of NPS-specific Theme Keywords in the NPS Metadata Tools and Editor editing stylesheet and will result in an empty keyword display in the NR-GIS Data Store.

3. If thumbnails are generated for a layer, ArcCatalog's metadata tool insert the binary format thumbnail into the metadata record. This can result in very large metadata files.

4. For a list of issues specific to importing metadata, see the NPS Metadata Tools and Editor help file 'Metadata Fixes' topic.

REFERENCES

National Park Service Metadata Profile. http://science.nature.nps.gov/nrdata/docs/npsprofile.cfm

SOFTWARE REFERENCES

NPS Metadata Tools and Editor. http://science.nature.nps.gov/nrgis/tools/editor.cfm

NR-GIS Data Store. http://science.nature.nps.gov/nrdata

USGS Metadata Parser and err2html. http://geology.usgs.gov/tools/metadata/